DURHAM
1869
CITY OF MEDICINE

CITY OF DURHAM | NORTH CAROLINA

Date: **May 5, 2015**

To: **Thomas J. Bonfield, City Manager**
Through: **Keith Chadwell, Deputy City Manager**
From: **Mark D. Ahrendsen, Director of Transportation**
Subject: **Durham-Chapel Hill Boulevard (Business 15-501) Road Reconfiguration Project**

Executive Summary

NCDOT contractors are scheduled to resurface Durham-Chapel Hill Boulevard (Business 15-501) "Boulevard" in 2015. City Transportation evaluated the corridor and determined that the roadway pavement markings could be reconfigured from the current five-lane section to a three-lane section with bicycle lanes, and bus pull-outs and on-street parking accommodations. The proposal would address recommendations from the *Durham Comprehensive Bicycle Transportation Plan* and on-going speeding and accident concerns. A proposed plan was presented to area residents and business owners at a public meeting in April. Public comments were both supportive and critical of the project. Since capacity analysis shows the facility would operate at acceptable service levels with the pavement markings reconfiguration, NCDOT indicated support for the configuration requested by the City. Given the mixed public positions, the Transportation Department recommends that the City Council review the proposed project, community concerns, and provide the appropriate policy direction.

Recommendation

The Transportation Department recommends that the City Council request the N. C. Department of Transportation reconfigure the pavement markings on Durham-Chapel Hill Boulevard between Chapel Hill Road and University Drive from a five-lane vehicle cross section to a three-lane vehicle cross section consisting of one center turn lane, one travel lane in each direction, one bicycle lane in each direction and bus pull-outs and on-street parking accommodations.

Background

In November 2014, NCDOT Division 5 notified the City of Durham of proposed 2015 resurfacing projects. NCDOT contracts road resurfacing projects annually, including the associated pavement markings. The advance notification provides the City an opportunity to evaluate resurfacing projects for potential pavement markings revisions and to schedule pending utility work to avoid patching newly paved streets. City Transportation identified projects from among the scheduled resurfacing projects as potential roadway marking reconfiguration candidates. A preliminary pavement marking plan was then prepared for Durham-Chapel Hill Boulevard (the "Boulevard") between Chapel Hill Road and University Drive. The pavement marking plan would alter the road from a five-lane vehicle cross section to a three-lane vehicle cross section with one center turn lane, one travel lane in

each direction, one bicycle lane in each direction, and bus pull-outs and on-street parking where feasible.

The proposed configuration was designed to address an existing speeding problem along the corridor and implement bike lanes proposed in the adopted *Durham Comprehensive Bicycle Transportation Plan*. The existing speed limit is 35 mph. The 85th percentile speeds range from 45 to 50 mph. The restriping will meter speeding to the slowest moving vehicle in a single lane of traffic in each direction. The projected speed reductions would result in increased reaction times and a reduction in overall crashes. The proposed alignment will allow left-turn movements (into/from driveways) to turn against a single lane of slower moving traffic. The current configuration requires drivers to turn against two lanes of opposing traffic at higher travel speeds. The bike lane implementation is consistent with the adopted *Durham Comprehensive Bicycle Transportation Plan* (adopted by the City Council on Nov 20, 2006 and the Durham Board of County Commissioners on Nov 13, 2006). The proposed bike lanes would provide connectivity from the Boulevard to the north along Chapel Hill Road, to Duke University, the Ninth Street Business District, and Downtown Durham. Bike lanes also connect to the east along University Drive to the American Tobacco Trail.

The project will also shorten the effective pedestrian crossing distance of the Boulevard by 24 feet with slower vehicle traffic. Transit accommodations will be implemented via delineated bus pull out zones. The proposed design will also provide delineated on-street parking in critical locations in an effort to mitigate existing illegal parking along the road shoulder. The proposed pavement marking changes will address speeding related run-off-road incidents on the west end of the Boulevard near the Chapel Hill Road overpass, and mitigate eastbound rear-end accidents at Nation Avenue.

To collect public feedback, the Transportation Department held a public meeting on the evening of April 7, 2015 at Rogers-Herr Middle School to preview the project plans with the public. Meeting notices were mailed to adjoining property owners along the corridor and approximately 75 residents and business owners attended. Attendees were encouraged to provide written comments at the meeting or within three following weeks. In general, the adjacent property owners were opposed to the project. Neighborhood associations, the bike community, and individual residents largely promoted the project. A detailed summary of the comments and responses is included in Appendix A.

The primary concerns with the project pertained to roadway capacity and turning movement safety and efficiency. City Transportation and NCDOT staff developed and reviewed a traffic model to compare the Boulevard as a five-lane cross section (current condition) versus a proposed three-lane cross section. The study concluded that adequate capacity will remain with the road reconfiguration. A separate traffic signal study conducted in 2012 indicates a traffic signal is warranted at the Hope Valley Road intersection. The study was forwarded to NCDOT for review and funding consideration. The traffic signal project is currently unfunded and is not an eligible expense under the resurfacing project.

NCDOT anticipates completing all proposed resurfacing by the fall of 2015. To implement the road reconfiguration, City Transportation must prepare and submit final pavement markings plans to NCDOT by July 1, 2015.

Issues and Analysis

The Boulevard between Chapel Hill Road and University Drive is currently a five-lane cross section. This configuration accommodates large traffic volumes, but can lead to increased

speeding, crashes, property damage, and injuries. From 2009 to 2014, there were 157 recorded crashes on this one-mile section. The accidents resulted in 54 injuries and an estimated $750,000 in property damages. Accident rates along the Boulevard are generally above NCDOT's average accident rates for Urban US Highways in most measurable safety categories as shown in the table below.

Category	Boulevard	NC Urban US Routes Avg.
Total Crash Rate	573.20	210.37
Fatal Crash Rate	0.00	0.84
Non-Fatal Crash Rate	197.15	65.36
Night Crash Rate	102.23	44.58
Wet Crash Rate	153.34	31.74
Severity Index	3.55	3.99

(Note: Figures above are per 100 million vehicle miles traveled)

The proposed configuration was designed to address run-off-road incidents on the west end of the Boulevard near the Chapel Hill Road overpass and mitigate rear-end accidents in the eastbound direction at Nation Avenue. The proposed design may also reduce crashes that result from traffic turning left off the Boulevard onto a side street or driveway since the turns will be made across one lane of reduced-speed opposing traffic rather than two. Speeds will be controlled by the slowest moving vehicle in each direction resulting in a lower average speed along the roadway segment.

Bike lane accommodations will be made pursuant to the adopted *Durham Comprehensive Bicycle Transportation Plan*. The effective pedestrian crossing distance will be decreased by 24 feet. The proposed design will provide approximately 21 delineated on-street parking spaces in critical locations in an effort to mitigate existing illegal parking along the road shoulder. Transit accommodations will be implemented via delineated bus pull out zones.

Alternatives

1. Request the N. C. Department of Transportation reconfigure the pavement markings on Durham-Chapel Hill Boulevard between Chapel Hill Road and University Drive from a five-lane vehicle cross section to a three-lane vehicle cross section consisting of one center turn lane, one travel lane in each direction, one bicycle lane in each direction and bus pull-outs and on-street parking accommodations.

2. Request the N. C. Department of Transportation reconfigure the pavement markings on Durham-Chapel Hill Boulevard between Chapel Hill Road and University Drive from a five-lane vehicle cross section to a three-lane vehicle cross section consisting of one center turn lane, one travel lane in each direction, and one bicycle lane in each direction.

3. Request no changes to the existing pavement markings configuration as part of the NCDOT Durham-Chapel Hill Boulevard resurfacing project.

Financial Impact

The road reconfiguration project, including resurfacing and pavement markings, has no financial impact on the City.

SDBE Requirements
There are no SDBE requirements for this project.

Attachments
Project Area Map
Summary of Public Comments/Responses